

SECTION 21

SUBGRADE PREPARATION

21-1.01 Description. - This work consists of preparing subgrades for the placement of subsequent construction such as pavements, bases, subbases, curbs, gutters, sidewalks, driveways, and other structures, which are not specifically provided for under other sections of these specifications.

The preparation of the subgrade may be required at various elevations, depending upon the number of layers of material specified to be placed thereon or type of structure to be constructed and as required in Section 19 "Earthwork".

21-1.02 Classes. - Subgrade preparation is classified according to the plane or layer of material placed thereon as follows:

Class A. - Preparation of the native or imported material at the basement grade (grading plane).

Class B. - Preparation of any layer of new material above the basement grade (grading plane), on which a succeeding layer of material is to be placed.

Class C. - Rehabilitation of an existing surface upon which a layer of subbase, base, pavement, surfacing, or other specified material is to be placed.

21-1.03 Preparation. - Material shall not be placed upon the prepared subgrade until it has been inspected and approved by the Engineer.

21-1.03A Class A. - The preparation of Class A subgrade shall consist of grading and compacting native or imported soil material at the basement grade. Scarifying and cultivating will be required, prior to grading and compacting for dry soils which are impervious to the penetration of water, or for soils which contain excessive amounts of moisture which may result in unstable foundations, or for soils which are non-uniform in character which may result in non-uniform compaction and subsequent differential settlements of finished surfaces, or when a pavement material is to be placed directly on native soil.

After rough grading has been completed, when scarifying and cultivating is required, the basement material shall be loosened to a depth of at least 0.5 foot. The loosened material shall then be worked to a finely divided condition and all rocks larger than 0.25 foot in dimension shall be removed. The moisture content shall be brought to optimum by the addition of water, or by the addition and blending of dry suitable material or by the drying of existing material as the case may be. The material shall then be compacted by approved compacting equipment.

Uniform pervious soils, that allow the immediate penetration of water or uniform impervious soils which allow the penetration of water to a depth of at least 0.5 foot, after the addition of an approved wetting agent to the water, will not require scarifying and cultivating unless a condition previously set forth in this section requires such processing. When scarifying and cultivating are not required, the moisture content of the top 0.5 foot of the material shall be brought to optimum

by addition of water at the surface, and the material shall be compacted by approved equipment.

21-1.03B Class B. - The preparation of Class B subgrade shall consist of finishing the surface of any layer of material above the grading plane in accordance with the provisions of the sections for such material, as described below.

<u>Type of Material</u>	<u>Section</u>
Lime Treatment	24
Aggregate subbase	25
Aggregate base	26
Cement treated base	27
Lean Concrete Base	28
Treated Permeable Base	29
Deep Lift Asphalt Base	30
Asphalt Concrete	39
Portland Cement Concrete Pavement	40

Portions of the subbase, base, or other material which have become damaged or destroyed since completion shall be repaired or reconstructed to the specified tolerance requirements for grade and cross section immediately prior to placing any new material thereon, or immediately prior to the application of a curing seal, prime coat or tack coat.

21-1.03C Class C. - In advance of spreading any new material on an existing surface to be rehabilitated, surface shall be cleaned of all dirt and loose material.

Broken, failed or otherwise unsatisfactory portions of the existing surface and sections interfering with new construction shall be removed and disposed of. The areas and depths to be removed shall be as shown on the plans and as directed by the Engineer. The basement grade area in the exposed spaces shall be watered and compacted, after which the space shall be filled with subbase, base, or pavement material as shown on the plans or as directed by the Engineer.

Where shown on the plans or specified in the special provisions or directed by the Engineer, the existing surface shall be scarified, watered and rolled in advance of placing any new material thereon.

Where shown on the plans or specified in the special provisions, a leveling course shall be spread upon the existing surface in accordance with the specifications for the type of material being placed, and no compensation other than the contract price or prices being paid for the material will be made for such work, unless otherwise designated.

21-1.04 Conform Areas. - Roadway or other areas where "grade only" or "conform" is called for on the plans, shall be graded to meet the tolerances for a base material grade. The finished surface shall be a straight grade from the finished pavement or curb elevations shown on the plans to the elevation of the existing ground at the extremities of the area graded.

21-1.05 Compaction. - The finished subgrade immediately prior to placing subsequent layers of material thereon shall have a relative compaction of

not less than 95 percent for a depth of 0.5-foot, or to a depth of 3 ft. below finished grade for engineered fill area. The subgrade for sidewalks, driveways, aprons and similar structures below the aggregate or sand cushion shall be compacted to a relative compaction of 95 percent for a depth of 0.5 foot. After compaction and trimming, the subgrade shall be firm, hard, and unyielding.

Relative compaction will be determined in accordance with California Tests 216, Part II and 231.

The Engineer will perform one initial compaction test and a second compaction retest for failure of the material to meet specification requirements on initial testing. The above 2 tests will be performed in each completed area without charge to the Contractor. In those areas where more than the 2 tests specified above are required for failure of the material to meet the specified compaction requirements, the Contractor will be assessed \$100.00 for each additional test required until the material meets the specified compaction requirements. The Contractor agrees to pay said amounts to the City as liquidated damages, not as a penalty, and further agrees that the City may deduct the amounts from monies due or that may become due the Contractor under the Contract.

21-1.06 Tolerances. - The finished subgrade for pavements, sidewalks, curb and gutters, driveways, aprons and other roadway structures shall be uniform and shall not vary more than 0.02-foot from the specified grade and cross section. The finished subgrade for subbase or base material shall not vary more than 0.05-foot from the specified grade and cross section, except as otherwise specified in the appropriate sections of these City Standard Specifications for the material being placed.

21.107 Measurement. - Where a separate pay item for Class A subgrade is designated in the Engineer's Estimate, the area of subgrade preparation to be paid for will be measured by the square foot to the dimensions shown on the plans. No allowance will be made for subgrade preparation outside such dimension unless ordered by the Engineer.

21-1.08 Payment. - The area of Class A subgrade will be paid for at the contract price per square foot. The above price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all work in preparing the subgrade complete, as shown on the plans, as specified in these specifications and as directed by the Engineer.

Where a contract item is not provided for Class A subgrade and for all other subgrade preparation, no separate payment will be made for such work. Full compensation for such subgrade preparation shall be considered as included in the various contract items of work involved.